NEMATICIDE

FOSTHIAZATE
Contact nematicide

Fosthiazate is a nematicide discovered and developed by ISK. Fosthiazate provides a good and stable control of cyst, root-knot, root lesion and free-living nematodes in a wide range of crops such as potatoes, bananas, tomatoes, and other vegetables. The control activities of fosthiazate remain unaffected by soil type, soil pH and soil temperature. Since the early 1990’s, ISK has commercialized fosthiazate in multiple countries.

Physico-Chemical Properties

Chemical structure:

Class: organophosphate
IUPAC name: (RS)-S-sec-butyl-O-ethyl-2-oxo-1,3-thiazolidin-3-ylphosphonothioate
Molecular weight: 283.3
Molecular formula: C₉H₁₈NO₃PS₂
Vapour pressure: 5.6 × 10⁻¹ mPa (25°C)
Water solubility: 9.00 g/L (pH 7, 25°C)
Form: Liquid, slightly yellow
Development code: IKI-1145

Toxicology & Ecotoxicology

Rat LD₅₀ (oral): 73 mg/kg (m), 57 mg/kg (f)
Rat LD₅₀ (dermal): 2,396 mg/kg (m), 861 mg/kg (f)
Rat LC₅₀ (inhalation): 0.85 mg/L (m), 0.56 mg/L (f)
Skin irritation: slight irritant (rabbit)
Eye irritation: irritant (rabbit)
Skin sensitization: sensitizer (guinea pig)
Avian LD₅₀ (acute oral): 10 mg/kg bw (quail)
Avian LD₅₀ (acute oral): 20 mg/kg (mallard duck)
Fish LC₅₀: 114 mg/L (trout, 96 h)
Fish LC₅₀: 171 mg/L (bluegill, 96 h)
Bees LD₅₀ (acute oral): 0.61 µg/bee (48 h)
Bees LD₅₀ (acute contact): 0.26 µg/bee (48 h)
Daphnia magna EC₅₀: 0.47 mg/L (48 h)

Application

Broadcast and soil incorporation to control nematodes (Meloidogyne spp., Heterodera spp. and Pratylenchus spp.), aphids, mites, thrips, etc in vegetables, potatoes, tomatoes and bananas, etc. Applied mainly at 1.5-3.0 kg a.i./ha.

Mode of Action

Inhibition of acetylcholine esterase in nematodes and other pests. Its excellent systemic action also provides high performance against nematodes and foliar insect pests. Acts against motile larval stages of nematodes in the soil and prevents invasion to roots of crops.

Product

<table>
<thead>
<tr>
<th>Trade Names</th>
<th>NEMATHORIN, CIERTO, NEMABUSTER, 福気多, etc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formulations</td>
<td>1.5%G, 5%G, 10%G, 30%SL, 150EC</td>
</tr>
<tr>
<td>Registered Countries</td>
<td>Asia, China, Japan, South Korea, Taiwan, Philippines, etc.</td>
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<tr>
<td>Registered Countries</td>
<td>Europe, Belgium, France, Germany, Hungary, Romania, Italy, Morocco, Netherlands, Spain, Turkey, UK, etc.</td>
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<tr>
<td>Crops</td>
<td>Vegetables, Potatoes, Sweet potatoes, Bananas, Pine tree, etc.</td>
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</tbody>
</table>
The Efficacy of Fosthiazate on Root-knot nematodes in Tomato

![Untreated vs Fosthiazate (2 kg a.i./ha)]

**Damaged Melon by Meloidogyne incognita**

![Untreated vs Fosthiazate](image)

**Characteristics**

- Excellent control of major plant parasitic nematode pests such as root-knot, root-lesion, cyst, burrowing nematodes.
- It exhibits nematicidal and nemastatic activities.
- Stable activities in various soil conditions (soil pH, temperature, moisture, etc.)
- Improves yield and quality of crops.
- Excellent selectivity on crops.
- Applied at relatively lower dose rates compared with other soil applied insecticides & nematicide (1.5 to 3.0 kg a.i./ha).

**Pest Spectrum**

<table>
<thead>
<tr>
<th>Nematodes</th>
<th>Root-knot nematode</th>
<th>Meloidogyne spp.</th>
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</thead>
<tbody>
<tr>
<td>Root-lesion nematode</td>
<td>Pratylenchus spp.</td>
<td></td>
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<tr>
<td>Cyst nematode</td>
<td>Globodera spp., Heterodera spp.</td>
<td></td>
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<tr>
<td>Burrowing nematode</td>
<td>Radopholus similis</td>
<td></td>
</tr>
<tr>
<td>Potato root nematode, Iris nematode</td>
<td>Ditylenchus destructor</td>
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<tr>
<td>Spiral nematode</td>
<td>Helicotylenchus sp.</td>
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<tr>
<td>Stylet nematode</td>
<td>Tylenchoryynchus spp.</td>
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<tr>
<td>Chrysanthemum foliar nematode</td>
<td>Aphielenchoides ribesnaboisi</td>
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<tr>
<td>Pine wood nematode</td>
<td>Bursaphelenchus xylophilus</td>
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<tr>
<td>Rice white-tip nematode</td>
<td>Aphelenchoides besseyi Christie</td>
<td></td>
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<tr>
<td>Other insects</td>
<td>Thrips, Aphids, Mites, Whiteflies, Bugs, Beetles</td>
<td></td>
</tr>
</tbody>
</table>

![Meloidogyne incognita](image)

![Globodera rostochiensis](image)